

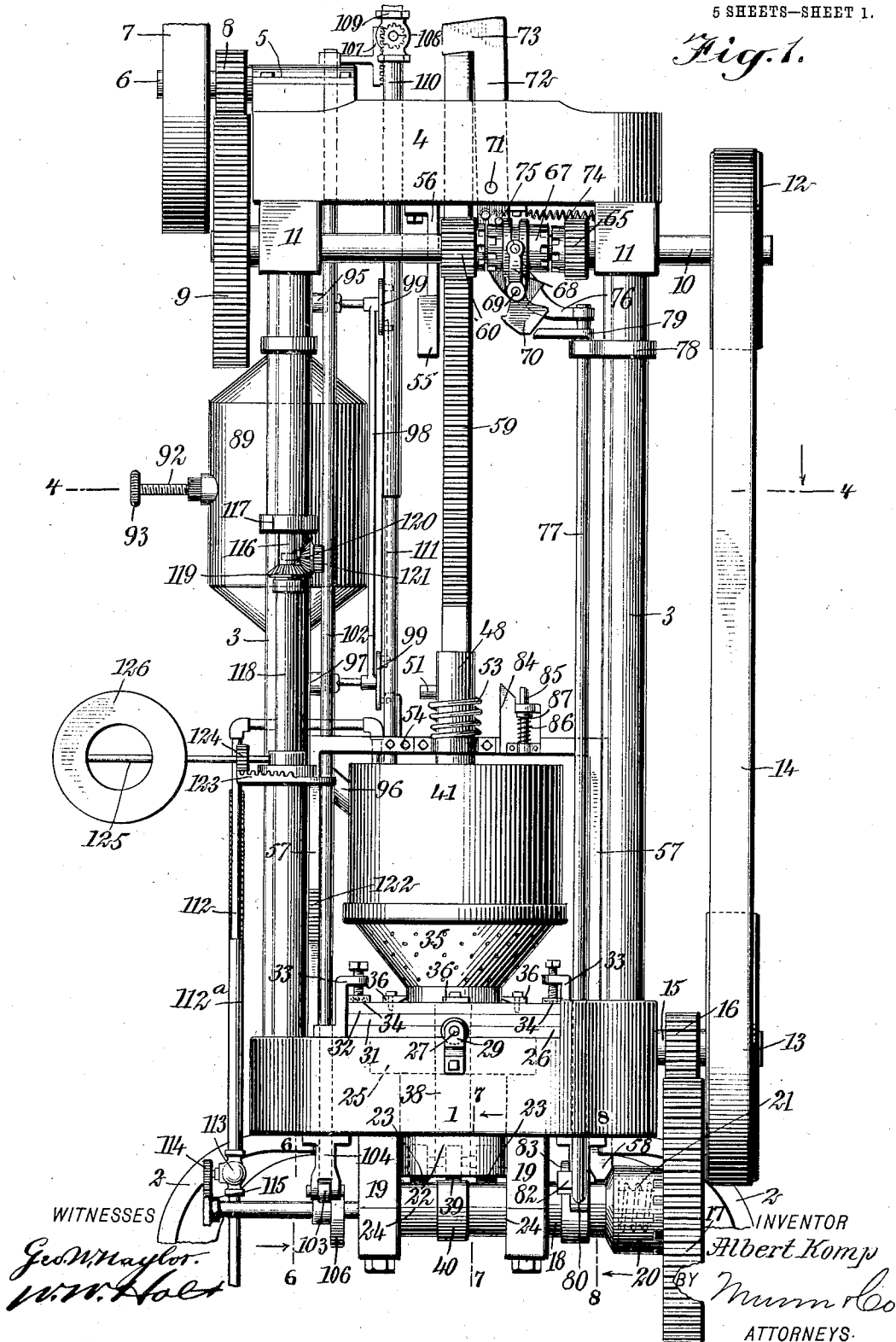
No. 868,996.

PATENTED OCT. 22, 1907.

A. KOMP.
PULP SHAPING MACHINE.
APPLICATION FILED APR. 22, 1907.

5 SHEETS—SHEET 1.

Fig. 1.

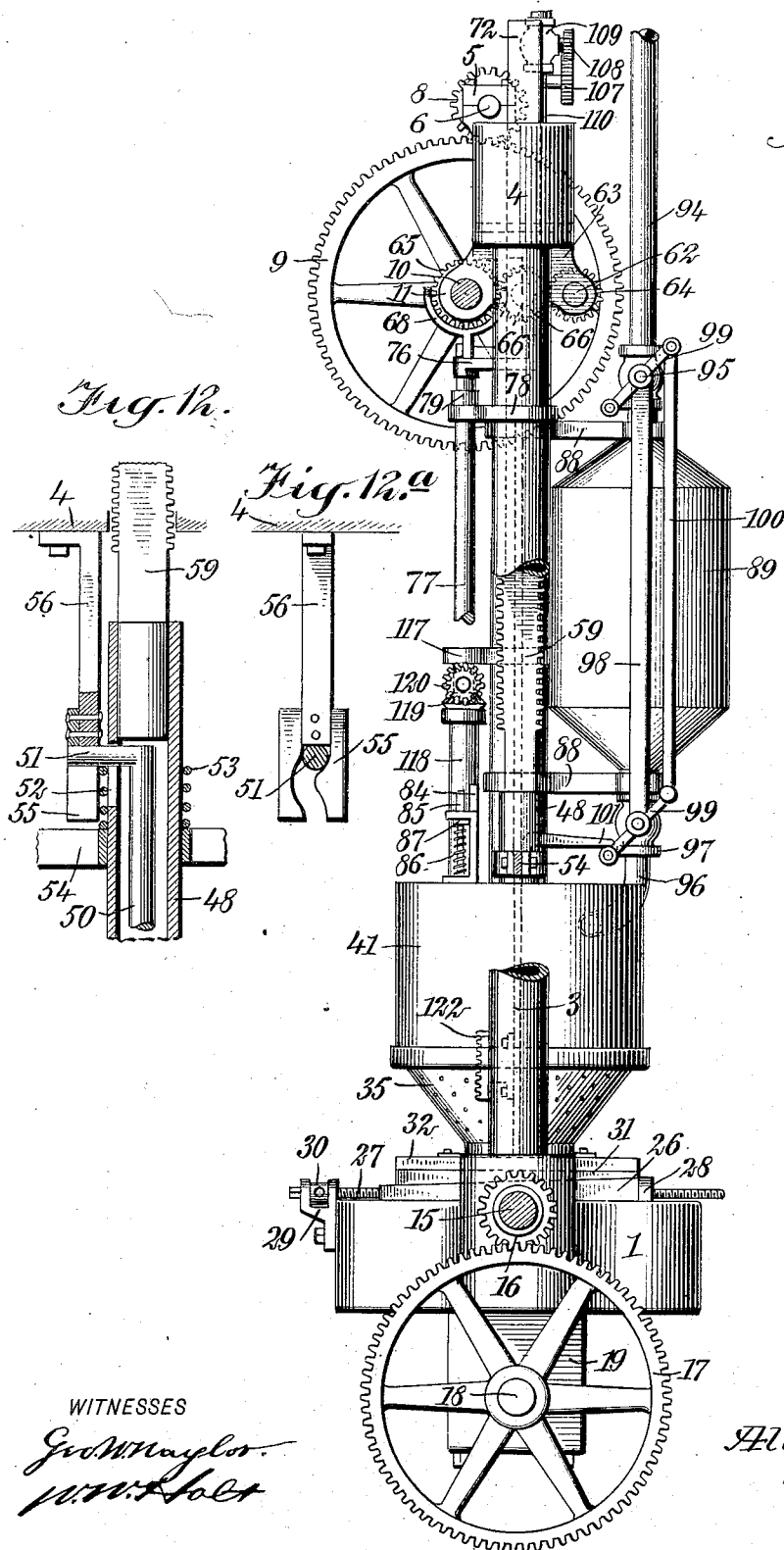


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5 SHEETS—SHEET 2.



WITNESSES

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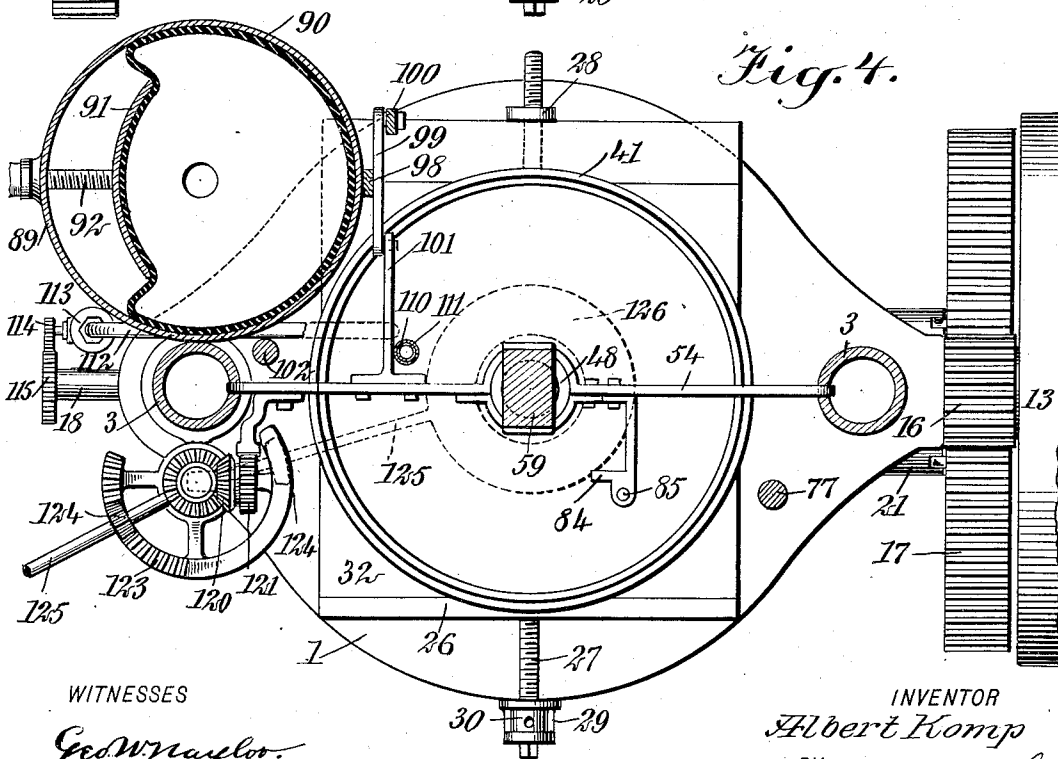
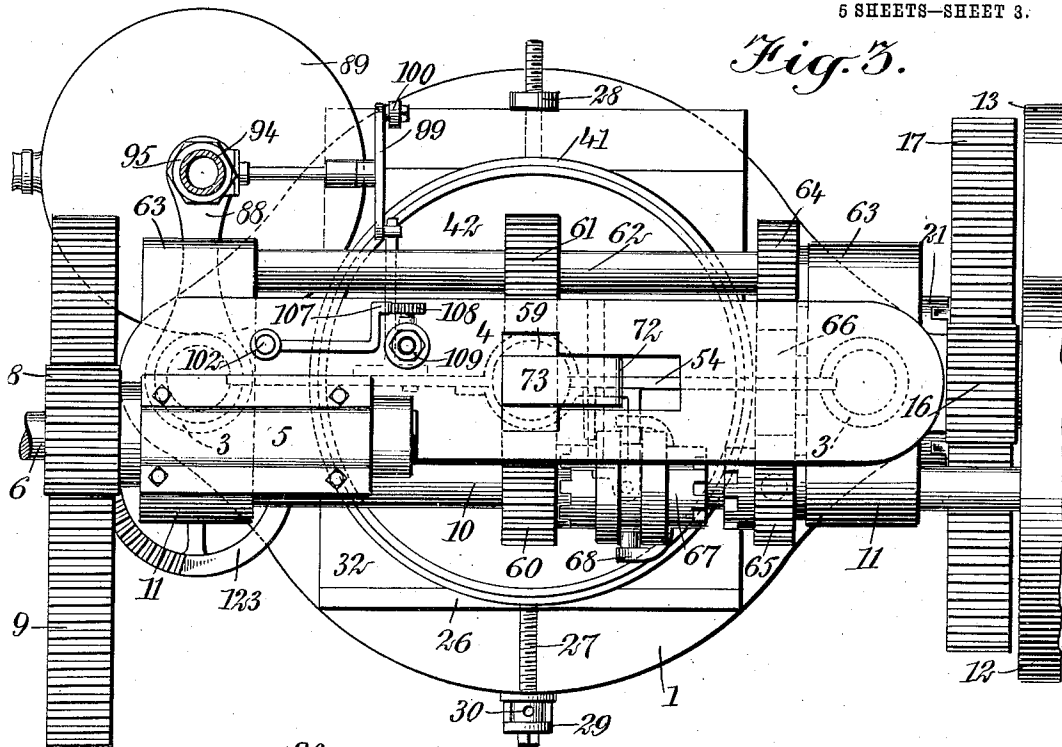
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5 SHEETS—SHEET 3.



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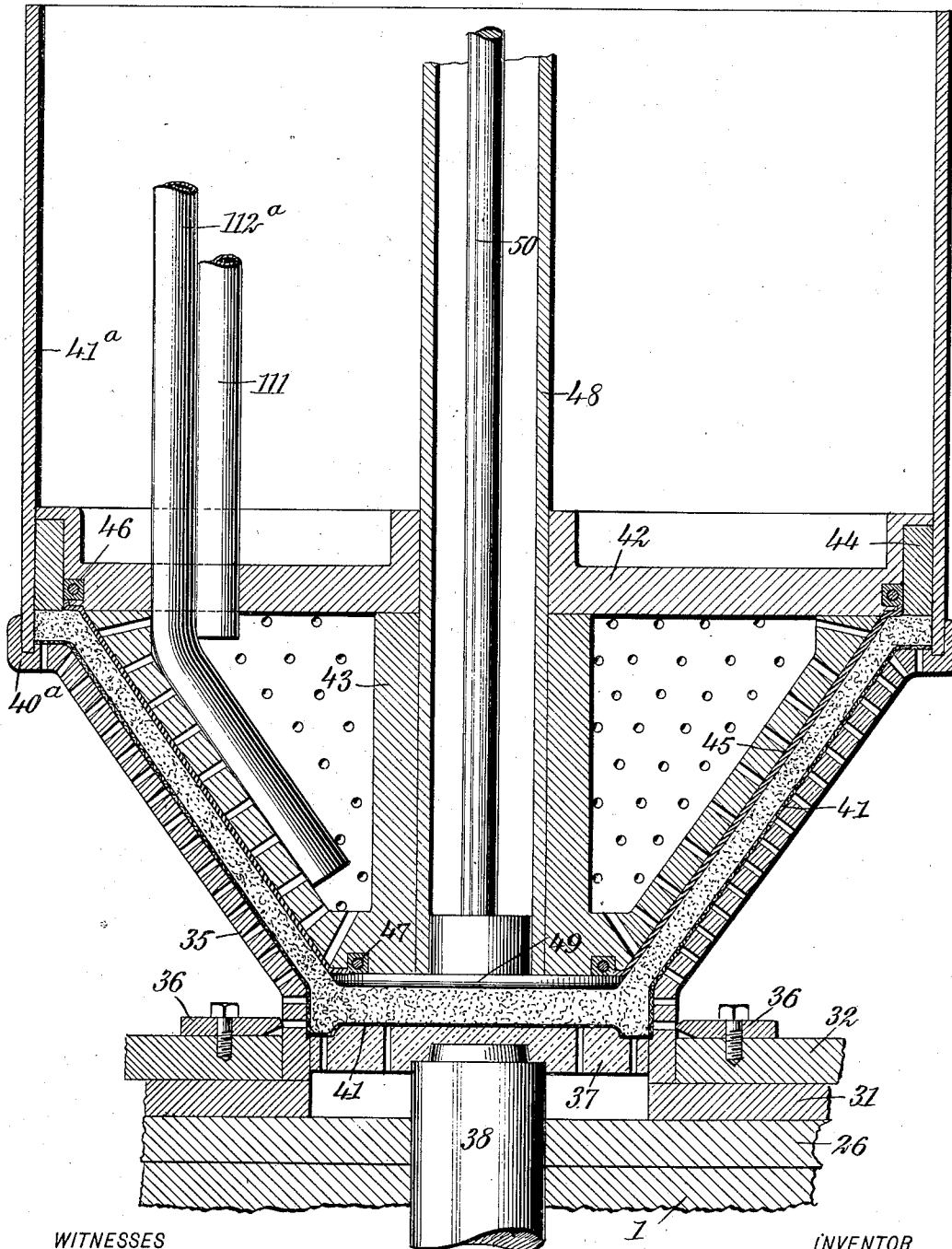
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5 SHEETS—SHEET 4.

Fig. 5.



WITNESSES

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5 SHEETS—SHEET 5.

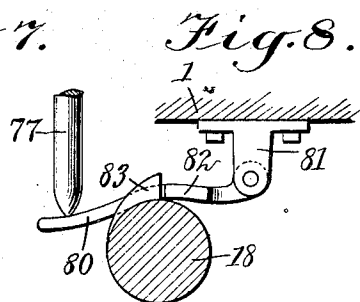
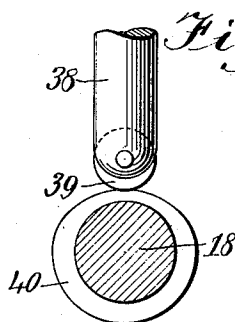
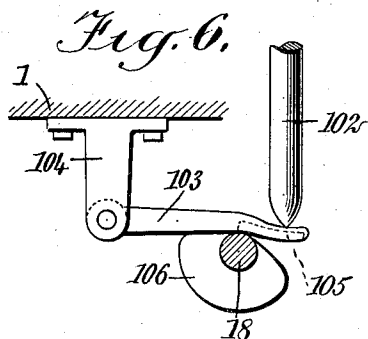
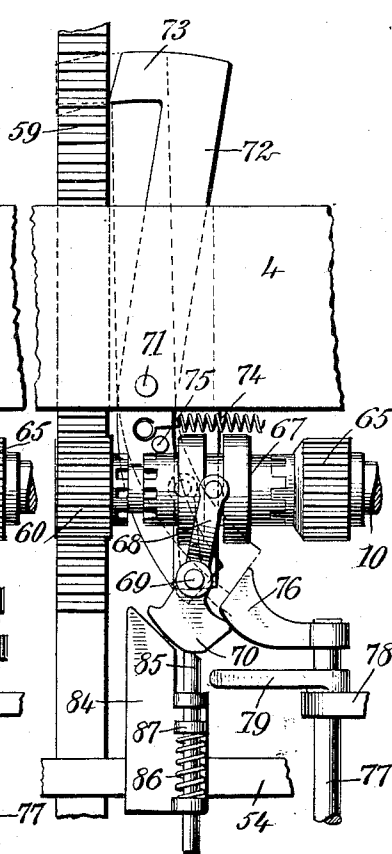
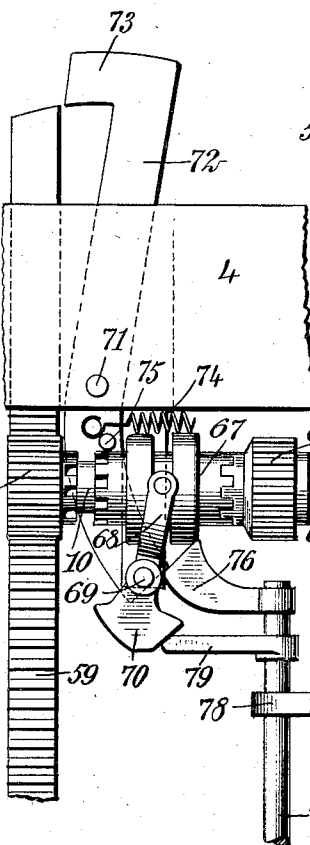
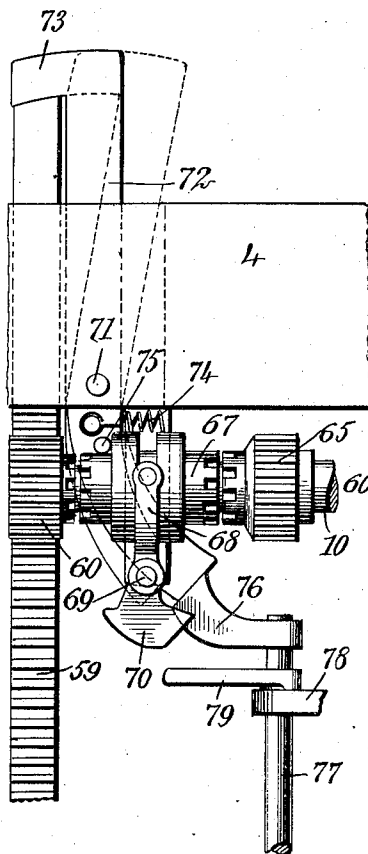


Fig. 9.

Fig. 10.

Fig. 11.



WITNESSES

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UNITED STATES PATENT OFFICE.

ALBERT KOMP, OF NEW YORK, N. Y.

PULP-SHAPING MACHINE.

No. 868,996.

Specification of Letters Patent.

Patented Oct. 22, 1907.

Application filed April 22, 1907. Serial No. 369,667.

To all whom it may concern:

Be it known that I, ALBERT KOMP, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented a new and Improved Pulp-Shaping Machine, of which the following is a full, clear, and exact description.

The invention contemplates a machine preferably altogether automatic in character and of large capacity, for molding articles of papier mâché or other indurated fiber, more especially such articles, for example, as plates, pails, basins, boxes, tubs and other vessels.

The invention has in view the provision of a machine of this character including a substantially fixed but slightly movable die and a coacting reciprocating die, between which the pulp used in forming the article, is automatically delivered, the quantity of pulp being adapted to be varied to suit the size and character of the article produced. The pressure to which the article is subjected by the approach of the dies is augmented by a fluid medium which is automatically introduced into and released from a chamber formed in one of the dies. After the article is formed it is automatically ejected to one side of the machine.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the preferred form of my improved pulp shaping machine; Fig. 2 is a side elevation of the same partly broken away to more clearly disclose the construction; Fig. 3 is a plan of the same; Fig. 4 is a cross section substantially on the line 4—4 of Fig. 1; Fig. 5 is a central, vertical section through the dies; Fig. 6 is a section on the line 6—6 of Fig. 1, looking in the direction of the arrow; Fig. 7 is a section on the line 7—7 of Fig. 1; Fig. 8 is a section on the line 8—8 of Fig. 1; Fig. 9 is a fragmentary view of the operating mechanism for the reciprocating die with the parts in position as when the die is at the lowest point of its movement; Fig. 10 is a corresponding view with the parts in position at the beginning of the upward movement of the reciprocating die; Fig. 11 is a corresponding view with the parts in position when said movement is substantially completed; Fig. 12 is a central, vertical, sectional view through a portion of the operating mechanism of the reciprocating die when the same is at the highest point of its movement, and Fig. 12^a is a side view of a fixed cam shown in Fig. 12.

The preferred construction of the machine comprises a bed block 1 supported on suitable legs 2 and carrying in fixed relation at opposite sides, supports 3 which are fixed at their upper ends to and support a crosshead 4. At one side of the crosshead 4 a bearing 5 is provided, in which is journaled a shaft 6, said shaft having fixed

thereto a pulley 7 by which the machine is driven, and an adjacent pinion 8, the latter meshing with a large gear 9 fixed to one end of a countershaft 10, this countershaft being journaled in suitable bearings 11 depending at opposite sides from the crosshead 4. Also fixed to the countershaft 10 is a pulley 12 operating to drive a pulley 13 through the intermediary of a belt 14. The pulley 13 is fixed to a shaft 15 journaled in a bearing carried by or in proximity with the bed-block 1 and is provided with a pinion 16 meshing with an enlarged gear 17 journaled on one end of a cam shaft 18, said shaft being journaled in bearings 19 depending from the under face of the bed block 1. The inner face of the gear 17 is provided with clutch teeth which are adapted to be engaged with similar teeth formed on the opposed end of a sleeve 20, said sleeve being splined to the shaft 18 and normally forced away from the gear 17 by a spiral spring 21 inclosed within it.

Centrally and vertically slidable in the bed block 1 is a large plunger 22 having rollers 23 journaled in its lower end, as shown in Fig. 1, the rollers resting on slightly eccentric portions 24 of the shaft 18. The upper end of the plunger 22 is constructed with an enlarged head 25 which is adapted to press on the under face of a wedge 26 slidably mounted on the top face of the bed block 1. This wedge is reciprocated laterally by a screw 27 which passes through an opening in the wedge and is in threaded engagement with a nut 28 preferably fixed to the wedge at one end. The opposite end of the screw 27 passes through a forked bracket 29 secured to the bed block 1, a collar 30 being fixed to the screw in the fork of the bracket to retain the same against longitudinal movement. A wedge 31 having the same inclination as the wedge 26 but reversely turned, is seated thereon and itself carries on its upper face a plate 32 of uniform thickness, this construction obviously making the top face of the wedge 31 parallel to the corresponding face of the bed block. Screw clamps 33 carried by the bed block and arranged at opposite sides of the wedges 26 and 31 and the plate 32, operate to force these parts to the bed block, the wedges and plate, however, being adapted to be lifted a slight distance by the action of the plunger 25, by means of a rubber or other elastic strip 34 placed under the screw of each clamp. Passing through an opening in the center of the plate 32 and seated on top of the wedge 31, is the lower, cylindrical end of a female die 35, the body of said die flaring outwardly to give it a form suitable to the shape of the vessel or article which it is to make. Clamps 36 carried by the plate 32, engage the die 35 at opposite sides and hold the same against displacement. Slidably mounted within the lower cylindrical portion of the die 35 is a chime-forming plate or disk 37, which is secured to the upper end of a plunger 38, the latter being slidable within a cen-

tral opening in the plunger 22 and carries a roller 39 at its lower end resting on an eccentric 40 carried by the shaft 18 intermediate the eccentrics 24.

The female die 35 and the chime-forming plate 37 are both perforated and covered on their inner faces with a wire mesh 41 which prevents the pulp from oozing out through the perforations during the formation of the article but permits the escape of the water. The top of the female die is constructed with a rim or flange 40^a receiving and retaining a cylinder 41^a, which slidably receives a piston 42, the latter carrying on its under face a metal die 43 which operates to form in the present instance the inside of the vessel. A packing ring 44 surrounds the piston and prevents any leak between it and the cylinder 41 during the formation of the article. The male die 43 is also perforated and is covered on its outer face with sheet rubber or other elastic material 45, the bottom and top edges of this material being preferably secured in the manner illustrated in Fig. 5, which consists in forming the upper and lower ends of the elastic covering with heavy rings 46 and 47, respectively, which are let into annular grooves formed in the piston and lower end of the die, the rings 46 and 47 being reinforced by the wire cores, as shown.

Passing centrally through the piston 42 and die 43 is a tube 48 which is closed at its lower end by a platen 49 forming the bottom of the male die. This platen is maintained in substantial contact and concentric with the male die by a rod 50, said rod having a lateral projection 51 passing through a slot 52 in one side of the tube 48, the projection being forced upwardly by a spiral spring 53 surrounding the tube and interposed between the projection 51 and frame 54, the latter being rigidly attached to the tube 48. The projection 51 is arranged in alinement with the cam slot in a block 55 which is supported from the under face of the crosshead 4 by a hanger 56.

The frame 54 is constructed with depending side-bars 57 guided in suitable ways formed in the standards 3, one of the side-bars being provided with a beveled lower extremity 58 which is adapted to be projected through an opening in the bed block 1 and engage with the inner bevel edge of the clutch sleeve 20 and slide said sleeve into engagement with the clutch face of the gear 17.

Fixed within the upper end of the tube 48 above the projection 51 is a rack-bar 59 provided with teeth at opposite sides, which are respectively in mesh with a pinion 60 fixed to the shaft 10, and a pinion 61 fixed to a shaft 62, this last-named shaft being journaled in bearings 63 carried by the crosshead 4, and has also fixed thereto a pinion 64 intergeared with an alining pinion 65, fixed to the shaft 10, through the intermediary of an idly-mounted pinion 66 shown in dotted outline in Figs. 2 and 3. The pinions 60 and 65 are constructed with opposed clutch faces adapted to be alternately engaged with the clutch ends of a sleeve 67 slidably splined to the shaft 10. A yoke 68 pivotally mounted on a hanger at a point 69 engages with a circumferential groove in the sleeve 67 and is provided with a double beveled head or cam 70 at the opposite side of its pivot, said cam being slightly flattened at its bottom, as clearly shown in Figs. 1, 9, 10 and 11.

Pivoted between an opening in the crosshead 4 at a

point 71, is a lever 72 having a projection 73 at one side designed to be forced over the upper end of the rack-bar 59 when the latter is in its lowest position, by a spring 74. A pin 75 projecting through one face of the lever 72 contacts with a shoulder on the sleeve 67 and prevents the engagement of the sleeve with the gear 60 as long as the overhanging end 73 of the lever 72 is in the path of the rack-bar. The lower end of the lever 72 is inclined to one side and is adapted to be engaged by a tappet 76 fixed to the upper end of a bar 77, the latter being guided in a bracket 78 carried by the adjacent standard 3, and in an opening through which it passes in the bed block 1. Also fixed to the bar 77 and adjacent to the tappet 76, is a tappet 79 designed to engage an inclined face of the cam 70 and shift the sleeve 67 in the direction of the clutch 65 shortly after the tappet 76 has engaged the lever 72 and withdrawn its projection 73 from the path of the rack-bar 59. The lower end of the bar 77 rests on an arm 80 pivotally suspended at one end from a bracket 81 secured to the under face of the bed block 1. The arm 80 is constructed with a projection 82, which is arranged in the path of a cam 83 carried by the cam shaft 18.

Fixed to the crossbar of the frame 54 is a plate 84 having an upper bevel edge and a pin 85 having a correspondingly bevel upper end and slidable within suitable guides carried by one face of the plate. A spring 86 surrounding the pin 85 and interposed between one of its bearings and a fixed collar 87, operates to normally retain the upper end of the pin in an elevated position, as shown in Fig. 1.

Carried on suitable supports 88 attached to one of the standards 3, is a reservoir 89, preferably constructed with opposed conical ends, and having a rubber or other like lining 90, the lining being adapted to be contracted to change the capacity of the tank, by a plate 91 movable by a screw 92, the latter being threaded through one side of the tank and provided on the exterior thereof with an operating knob or handle 93. A pulp supply pipe 94 leads into the upper end of the tank and is provided with a controlling valve 95. A discharge pipe 96 leads from the opposite and lower end of the tank and is provided with a controlling valve 97, the discharge pipe leading into one side of the cylinder 41. The stems of the controlling valves 95 and 97 are connected by a bar 98 which prevents vibration, and retains the valves a fixed distance apart. Fixed to the stems of the valves 95 and 97 are operating levers 99 which are connected together at the outside of the machine by a link 100. The opposite ends of said levers are arranged in the path of a finger 101 secured to the crossbar of the frame 54.

Vertically slidable through openings in the bed block 1 and crossbar 4, is a bar 102 resting at its lower end, as shown in Fig. 6, on an arm 103 pivotally suspended from a bracket 104 secured to the under face of the bed block 1. The arm 103 is constructed with a projection 105 at one side, which is arranged in the path of a cam 106 fixed to the reduced, extended end of the shaft 18. The upper end of the bar 102 above the crosshead 4, carries a rack 107 which is engaged with a pinion 108 secured to the stem of a valve 109, said valve being carried by a pipe 110 leading from a suitable water pressure and passing through the cross-

head 4 a short distance. Telescoping within the pipe 110 is a pipe 111 secured to and passing through the piston 42 into the chamber formed by the male die 43. Also passing into this chamber is a discharge pipe 112 having a downwardly-directed branch at one side of the machine, telescoping within a pipe 112^a, the latter leading past the reduced extended end of the shaft 18, where it is provided with a spring valve 113 having a pinion 114 fixed to the stem thereof. This pinion 114 is adapted to intermesh with a segmental gear 115 fixed to the extremity of the shaft 18.

A shaft 116 supported at one side of and from one of the standards 3 by brackets 117, carries a sleeve 118 which is provided at its upper end with a bevel pinion 119 intermeshing with a corresponding pinion 120, the latter being fixed to a pinion 121 in the path of a rack 122 carried by one of the depending bars 57 of the frame 54. At the lower end of the sleeve 118 is a horizontally-disposed segmental gear 123 which is adapted to be engaged with the teeth of a gear 124 fixed to a shaft 125, said shaft being journaled at its inner end within the sleeve 118. The opposite and outer end of this shaft carries a ring support 126 for ejecting the finished article.

The operation of the machine may be traced as follows: Assuming the parts to be in the position shown in Figs. 1 and 5, in which the clutch 21 is engaged with the gear 17, causing said shaft to revolve, the valve 108, under the action of the bar 102, is permitted to drop by gravity by reason of the cam 106 moving under the arm 103, cutting off the water supply to the piston and about the same time the spring valve 113 is opened by the segmental gear 115, permitting the water within the piston to drain off. As the teeth of the segmental gear 115 leave the pinion 114, the spring within the valve operates to automatically close it. About this time the cam 83 raises the arm 80 and bar 77, and the tappet 76 engages with the lever 72 and throws the projection 73 out of the path of the rack-bar 59. On a slight further elevation of the bar 77, the tappet 79 engages with the cam 70 and throws the clutch 67 into engagement with the gear 65, which revolves the shaft 62 through the intermediate gears 66 and 64, causing the rack-bar 59 to move upwardly with the piston 42 and male die 43, the latter carrying with it the fibrous article just formed. On the continued upward movement of the piston, the rack 122, carried by one of the depending side-bars 57 of the frame 54, engages with the pinion 121, revolving the sleeve 118 and the ejector attached thereto, causing the latter to axially revolve from a vertical to a substantially horizontal position by reason of the engagement of the pinion 124 with the segmental gear 123 as it is carried over the cylinder 41, directly under the piston. When the ejector ring is in this position, the platen 49 is given a slight revolution and depressed against the spring 23 by the engagement of the projection 51 with the cam 55, causing the article just formed to drop from the male die upon the ejector ring 126. Also about this time the finger 101 carried by the frame 54 strikes the projecting arm of the lever 99, cutting off the valve 95 and simultaneously therewith opening the valve 97. The frame 54 on its upward journey with the piston, carries the projecting portion 58 out of the path of

the clutch sleeve 20, which is thereafter automatically disengaged from the gear 17 by the spring 21, thus bringing the shaft 18 to a stop. As the frame 54 reaches a point near the top of the machine, the inclined upper edge of the plate 84 strikes the opposed bevel edge of the cam 70. The spring-pressed pin 85 at the same time engages the flattened bottom of this cam, as illustrated in Fig. 11. When the plate 84 throws the cam 70 to one side sufficiently to disengage the clutch 67 from the pinion 65, the pin 85 which has been depressed by contact with the flattened end of the cam 70, slips to the inclined face of this cam with which the plate 84 is engaged, and by virtue of its stored-up energy throws the clutch into engagement with the gear 60, causing the plunger to start on its downward travel.

Before the piston reaches the article which has previously been finished and deposited on the ejector-plate or ring 126, the rack 122 engages with the pinion 121 and revolves the article and ring about the sleeve 118 as a center and simultaneously when the pinion 124 is engaged with the segmental gear 123, revolves the ejector-ring axially about the shaft 125 until it assumes a substantially vertical position, as shown in Fig. 1, and ejects the finished article at this side of the machine. As the piston continues to move downwardly, the finger 101 encounters the lever 99 of the valve 97, closing this valve and simultaneously opening the valve 95, thus permitting the reservoir 89, which has been emptied, to be refilled through the pipe 94. As the end of the rack-bar 59 passes below the projection 73 of the lever 12, said projection is forced over the end of the rack-bar by the spring 74 and the pin 75, which is carried by the lever 72, throws the clutch 67 to a neutral position between the gears 60 and 65 and stops the further downward movement of the piston and attached die.

During the completion of the downward movement of the die and piston, the pulp which has been introduced into the cylinder 41 is forced into the space between the dies and the shaft 18 has been set in motion by reason of the bevel extremity 58 of the frame 54 contacting with the clutch 20 and forcing the same against the tension of the spring 21 in engagement with the gear 17. As the shaft 18 revolves, the large plunger 22 boldly lifts the lower die and the wedges 26 and 31 on which it is seated, as also the plate 32, a slight distance, forcing the water in the pulp out through the perforations in the die 35, the flange 38 at substantially the same time being forced upwardly, carrying with it the chime-forming plate 37. While the pulp is being subjected to this extreme pressure, the rod 102 is operated by the cam 106 acting on the arm 103 introducing fluid pressure through the pipes 110 and 111 into the chamber between the male die and piston. This fluid pressure acting through the perforations of the male die on the elastic covering 45, augments the extreme pressure caused by the forcing of the dies together, and produces the finished article which is as here shown, in the form of a basin. This operation is repeated at each reciprocation of the piston.

The machine is so constructed that dies for shaping other articles may be substituted for those shown, also the capacity of the reservoir 89 may be adjusted to

suit the thickness and character of the article manufactured and the wedge 26 may be adjusted to regulate the pressure to which the article is subjected.

While I have described the construction and operation of the machine in its preferred practical embodiment, I, nevertheless recognize that various changes may be resorted to, and consider that I am entitled to such modifications as fall within the scope of the claims annexed.

10 Having thus described my invention I claim as new and desire to secure by Letters Patent:

1. In a pulp shaping machine, the combination of dies relatively movable to and from each other, a reservoir having a lining, means for feeding pulp from said reservoir between said dies, and means for adjusting said lining whereby the capacity of said reservoir is varied, for the purpose described.

2. In a pulp shaping machine, the combination of dies relatively movable to and from each other, a reservoir having a lining, means for automatically feeding the contents of said reservoir between said dies, and a screw for adjusting said lining, whereby the capacity of said reservoir is varied for the purpose described.

3. In a pulp shaping machine, the combination of dies relatively movable to and from each other, a reservoir, means for filling and discharging said reservoir, a controlling valve for each of said means, and means carried by one of said dies for controlling said valve, whereby the reservoir is intermittently filled and discharged between said dies.

4. In a pulp shaping machine, the combination of dies relatively movable to and from each other, one of said dies being provided with a perforated chamber, means for introducing pulp between said dies, means for forcing said dies together, means for introducing a fluid pressure into said chamber while the dies are forced together, means for automatically releasing said pressure, and means for immediately thereafter retracting said dies.

5. In a pulp shaping machine, the combination of dies relatively movable to and from each other, a wedge for adjusting one of said dies a slight distance to and from the other, and means for bodily lifting said wedge and die when the dies are brought together.

6. In a pulp shaping machine, the combination of a bed block, wedges carried by said block, a die supported on said wedges, a reciprocating die coacting with the die carried by the wedges, means for adjusting one of said wedges whereby said die carried thereon is moved to and from the other, and means for bodily lifting said wedges and the die carried thereon.

7. In a pulp shaping machine the combination of dies, means for moving one of said dies to and from the other, means for locking said movable die when the dies are brought together, and means automatically controlled for thereafter forcing the other die toward the movable die.

8. In a pulp shaping machine, the combination of dies, means for moving one of said dies to and from the other, means for locking said movable die when the dies are brought together, means for thereafter forcing the other die toward the movable die, and means for regulating the distance between said dies independent of said means for moving them.

9. In a pulp shaping machine, the combination of dies, one of which is movable to and from the other, a platen carried by said movable die, and means for giving said platen a twist and depressing it as the movable die is retracted from the opposite die.

10. In a pulp shaping machine, the combination of dies, one of which is movable to and from the other, an ejector, and means for projecting the ejector under the movable die as the dies are retracted for receiving the finished article, and mechanical means operating within the movable die for detaching the article therefrom whereby it drops upon the ejector.

11. In a pulp shaping machine, the combination of dies, one of which is movable to and from the other, a platen carried by said movable die, an ejector, means for project-

ing the ejector underneath the movable die and finished article, means for giving said platen a twist and depressing it, whereby the finished article is released from the movable die and deposited on said ejector, and means for moving the ejector to one side of the machine and discharging the finished article therefrom as said dies approach each other.

12. In a pulp shaping machine, the combination of a male and a female die, means for automatically reciprocating one of said dies to and from the other, a plate slidably mounted in the bottom of the female die, means for bodily forcing the other die toward the reciprocating die when the latter has reached the lower limit of its movement, and means for forcing the plate in the direction of the male die when said dies are forced together.

13. In a pulp shaping machine, the combination of a bed block, dies relatively movable to and from each other, one of which is seated over the bed block, means interposed between said last-named die and the bed block, means for clamping said last-named means to the bed block, including an elastic abutment, and means for bodily lifting said interposed means and the die against said abutment.

14. In a pulp shaping machine, the combination of dies relatively movable to and from each other, a bed block, reversely-arranged wedges carried by the bed block on which one of said dies is seated, means for clamping the wedges to the bed block including an elastic abutment, means for adjusting one of said wedges whereby the relative elevation of the die carried thereby is changed, and means for bodily lifting said wedges and die against said abutment.

15. In a pulp shaping machine, the combination of dies relatively movable to and from each other, a bed block, means carried by the bed block on which one of said dies is seated, means for clamping said last-named means to the bed block including an elastic abutment, a plunger having a forming plate movably mounted within said seated die, and a plunger for bodily lifting said seated die and the means on which it is seated against said elastic abutment.

16. In a pulp shaping machine, the combination of dies relatively movable to and from each other, a bed block, wedges reversely arranged on which one of said dies is seated, carried by said bed block, clamps for clamping the wedges to the bed block at opposite sides including an elastic abutment, a screw for adjusting one of said wedges, whereby the relative elevation of the die carried thereon is changed, a plunger for bodily lifting said wedges, a die carried thereon against said abutment, and a second plunger slidably within the first having forming means movably mounted in said die carried on the wedges.

17. In a pulp shaping machine, the combination of dies, one of which is movable to and from the other, a piston on which the movable die is carried, a cylinder in which the piston is adapted to slide, carried by the other die, and means for automatically introducing pulp into said cylinder between said dies.

18. In a pulp shaping machine, the combination of dies, one of which is movable to and from the other, a piston on which the movable die is carried, a perforated chamber formed between the piston and movable die, a cylinder in which the piston is adapted to slide, carried by the other die, means for introducing pulp into said cylinder, means for thereafter forcing said dies together, whereby the pulp is compressed between them, and means for introducing fluid pressure into said chamber while the pulp is under compression.

19. In a pulp shaping machine, the combination of dies, means for reciprocating one of said dies including a rack-bar, means for locking said rack-bar against upward movement when the dies are brought together, and means for forcing the opposite die in the direction of the reciprocating die when the rack-bar is locked.

20. In a pulp shaping machine, the combination of a bed block, a die carried by said bed block, an eccentric shaft journaled in bearings carried by said bed block, a countershaft, a movable die coacting with said first-named die, means for driving the movable die from said countershaft, means carried by said movable die for throwing the

eccentric shaft into and out of operation, and means operated by the eccentric shaft for throwing the driving means of the movable die into and out of operation on said countershaft.

5 21. In a pulp shaping machine, the combination of dies, one of which is movable to and from the other, an eccentric shaft, a countershaft, means for reciprocating the movable die from the countershaft, means carried by the movable die for throwing the eccentric shaft into and out of operation, and means driven by the eccentric shaft for throwing said driving means for the reciprocating die into and out of operation on the countershaft.

10 22. In a pulp shaping machine, the combination of dies relatively movable to and from each other, an eccentric shaft, a countershaft, a rack-bar carried by one of said dies, means for reciprocating said rack-bar from the countershaft, a clutch carried by the countershaft for throwing said reciprocating means into and out of operation, and means operated by said eccentric shaft for automatically controlling said clutch.

15 23. In a pulp shaping machine, the combination of dies, means operating to move said dies to and from each other, means for automatically feeding a predetermined quantity of pulp between said dies, means for throwing the operating means of one of said dies out of action and locking the die when the dies are brought together, means for thereafter forcing the other die in the direction of the locked die whereby the completed article is produced, and means for withdrawing said article from the dies and ejecting it from the machine.

20 24. In a pulp shaping machine, the combination of dies relatively movable to and from each other, means for automatically feeding a predetermined quantity of pulp between said dies, means for thereafter causing the dies to approach each other, whereby the pulp is pressed therebetween, means for locking one of said dies against relative movement, means for bodily lifting the other die against the locked die, means for introducing a fluid pressure into one of said dies, means for automatically releasing said pressure, and means for thereafter retracting said dies and ejecting the finished article therefrom.

25 25. In a pulp shaping machine, the combination of dies relatively movable to and from each other, an ejector co-operating with said dies, and means for simultaneously revolving said ejector in planes substantially at right angles to each other, for the purpose described.

26. In a pulp shaping machine, the combination of dies, a rack-bar, a countershaft means including a clutch carried by said countershaft for moving said rack-bar, means for automatically locking said rack-bar when the lower limit of movement thereof is reached, and means carried by said locking means to automatically throw out said clutch when said locking means is moved to locking position.

27. In a pulp shaping machine, the combination of dies, means for moving said dies to and from each other including a clutch, a lever having a depending cam for shifting said clutch, a cam shaft, means operated by said cam shaft for moving said depending cam in one direction, and means carried by one of said dies for moving the cam in the opposite direction.

28. In a pulp shaping machine, the combination of dies, a rack-bar to which one of said dies is attached, shafts having pinions in mesh with the opposite sides of said bar for reciprocating the bar and die, a clutch slidably splined to one of said shafts, and means for automatically shifting the clutch.

29. In a pulp shaping machine, the combination of dies, one of which is movable to and from the other, an ejector movable under the movable die when the dies are separated, a platen carried by said movable die, and means for depressing said platen to detach the finished article from the movable die, whereby it drops upon the ejector.

30. In a pulp shaping machine, the combination of dies one of which is movable to and from the other, an ejector, and means for revolving the ejector about a point to carry it under the movable die when the dies are separated, said means operating to revolve the ejector about said point out of the path of the movable die and thereafter rotate the ejector axially when the dies are brought together.

31. In a pulp shaping machine, the combination of dies adapted to form a fibrous article, an ejector, and means for revolving said ejector in planes at substantially right angles to each other to carry it into the path of said dies to receive said article and thereafter reversely revolve said ejector to discharge said article.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALBERT KOMP.

Witnesses:

W. W. HOLT,
JOHN P. DAVIS.